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PATENT

Zhu AF

Re: Application : D. Ryan Breese Case No. : 88-2066A
Serial No : 10/774,161 Art Unit No : 1732
Filed : February 6, 2004 Examiner : Mathieu D. Vargot
For : Preparation of Polyethylene Films

Enclosed are the following documents related to the above-identified application:

- | | |
|---------------------------------------|--|
| (X) Return Receipt of Postcard | () Request for Reconsideration |
| (X) Certificate of Mailing | Under 37 C.F.R. § 1.111 |
| () Preliminary Amendment | () Declaration Under 37 C.F.R. § 1.132 |
| () Assignment for Recordal | () Terminal Disclaimer Under 37 C.F.R. § 1.321(c) |
| () Information Disclosure Statement | () Notice of Appeal |
| Under 37 C.F.R. § 1.97(b)(1) | () Statement of Common Ownership |
| () Form PTO-1449 | () Amendment After Allowance |
| () Response to Office Action | (X) Appeal Brief Under 37 C.F.R. § 1.192(d) |
| () One-Month Extension of Time Under | () Issue Fee Transmittal |
| 37 C.F.R. § 1.136 (fee noted below) | () Certificate Under 37 C.F.R. § 3.73(b) |
| | () Amendment Under 37 C.F.R. § 1.121 |

The fee has been calculated as shown below:

CLAIMS AS AMENDED

| | Claims Remaining After Amendment | Highest No. Previously Paid for | Present Extra | Rate | Add'l Fee |
|---|-------------------------------------|---------------------------------------|------------------|------|--------------|
| Total Claims: | minus : 20 | : | :x \$ 50 | : | 0.00 |
| Ind. Claims: | minus : 3 | : | :x \$200 | : | 0.00 |
| Fee for Petition of Extension of time (1 month see below) | | : | \$ | : | 0.00 |
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- () No additional fee is required.
- (X) Charge \$500.00 to Deposit Account No. 01-2230. Two duplicate copies of this sheet are enclosed.
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : D. Ryan Breese
Application Number : 10/774,161
Filed : February 6, 2004
Title : PREPARATION OF POLYETHYLENE FILMS
Group Art Unit : 1732
Examiner : Mathieu D. Vargot
Docket No. : 88-2066A

Honorable Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

APPEAL BRIEF UNDER 37 C.F.R. § 1.192(d)

I. REAL PARTY IN INTEREST

The real party in interest is Equistar Chemicals, LP.

II. RELATED APPEALS AND INTERFERENCES

There are no other appeals or interferences known to Applicant, his representatives, or his assignee that will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

III. STATUS OF CLAIMS

Claims 1-19 are on appeal.

IV. GROUPING OF CLAIMS

The claims on appeal shall stand or fall together.

V. STATUS OF AMENDMENTS

Claims 1-19 on appeal have not been amended.

VI. SUMMARY OF THE INVENTION

The invention is a method for preparing a high modulus, high density polyethylene (HDPE) film. The method comprises orienting in the machine direction (MD) an HDPE blown film to a draw-down ratio greater than 10:1. The MD oriented film having an MD 1% secant modulus of 1,000,000 psi or greater. Preferably, the MD 1% secant modulus is 1,100,000 psi or greater. Preferably, the HDPE has a density within the range of 0.950 to 0.970 g/cc, a weight average molecular weight (Mw) within the range of 130,000 to 1,000,000, and a number average molecular weight (Mn) within the range of 10,000 to 500,000.

VII. QUESTION PRESENTED FOR REVIEW

Whether claims 1-19 are obvious over *Hatfield et al.* (Journal of Plastic Film & Sheeting, page 117, Vol.18, 2002).

VIII. ARGUMENT

MPEP §2142 provides: To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

First, *Hatfield et al.* cannot make Applicant's claims 1-19 obvious because the reference fails to teach at least two essential claim elements. Claim 1 reads:

“A method comprising orienting in the machine direction (MD) a polyethylene blown film to a draw-down ratio greater than 10:1 to produce an MD oriented film having a 1% secant MD modulus of 1,000,000 psi or greater.” (Emphasis added).

As the Examiner repeatedly admitted, *Hatfield et al.* not only fails to teach or suggest orienting a polyethylene film in the machine direction at a draw-down ratio greater than 10:1 but also fails to teach or suggest that an MDO method can produce an oriented film having a 1% secant MD modulus of 1,000,000 psi or greater. See page 2, item 1 of the Office Action dated September 15, 2006 and page 2, item 3 of the Office Action dated April 5, 2006.

MPEP §2143.03 also provides: To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). "All words in a claim must be considered in judging the patentability of that claim against the prior art." In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). If an independent claim is nonobvious under 35 U.S.C. 103, then any claim

depending therefrom is nonobvious. In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988).

According to the instruction of *MPEP* §2143.03, the Examiner fails to establish a prima facie case of obviousness of claim 1 over *Hatfield et al.* because two essential claim elements are missing from the reference. Further, according to the instruction of *MPEP* §2143.03, claims 2-19 cannot be obvious over *Hatfield et al.* because claims 2-19 depend from claim 1.

Second, *Hatfield et al.* cannot make Applicant's claims 1-19 obvious because there is no suggestion or motivation either in the reference itself or in the knowledge generally available to one of ordinary skill in the art, to modify the reference. See *MPEP* §2142.

Hatfield et al. teaches an MDO (machine direction orientation) method. More particularly, *Hatfield et al.* teaches the use of a process aid (a long chain carboxylic acid) to increase the draw ratio of a MMW-HDPE (medium molecular weight, high density polyethylene) film during MDO. According to *Hatfield et al.*, the process aid is used because “[m]any HDPEs need to be drawn at relatively high draw ratios before they orient evenly without stretch resonance.” See *reference page 118, the second last sentence of third paragraph.*

With the process aid, *Hatfield et al.* achieved a maximum draw ratio of only 8:1 and maximum 1% secant MD modulus of 401,620 psi. See *reference Table 2, page 122.* *Hatfield et al.* explains why a higher draw ratio cannot be usually reached: “The problem is that the film typically breaks while passing through the stretch resonance region before reaching these draw ratios or the film will not orient at the high draw ratio.” See *reference page 118, the last sentence of third paragraph.*

Contrary to the Examiner's obviousness assertion, Applicant finds no teaching or suggestion from *Hatfield et al.* which would motivate a person of ordinary skill in the art to orient a polyethylene blown film at a draw ration beyond 8:1 and to make an MDO film have a 1% secant MD modulus greater than

1,000,000. Instead, as discussed above, *Hatfield et al.* suggests that orienting the film beyond 8:1 draw ratio would be extremely difficult.

MPEP §2143.01 provides: In determining the propriety of the Patent Office case for obviousness in the first instance, it is necessary to ascertain whether or not the reference teachings would appear to be sufficient for one of ordinary skill in the relevant art having the reference before him to make the proposed substitution, combination, or other modification." In re Linter, 458 F.2d 1013, 1016, 173 USPQ 560, 562 (CCPA 1972).

As discussed above, there is no teaching in *Hatfield et al.* which "would appear to be sufficient for one of ordinary skill in the relevant art having the reference before him to make the proposed substitution, combination, or other modification." See *MPEP§2143.01*. Hence, *Hatfield et al.* cannot make claims 1-19 obvious.

Accordingly, Applicant respectfully requests that the Honorable Board of Appeal reverse the Examiner's above obvious rejection and allow Applicant's claims 1-19.

Respectfully submitted,
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Appendix

Claims on Appeal

1. A method comprising orienting in the machine direction (MD) a polyethylene blown film to a draw-down ratio greater than 10:1 to produce an MD oriented film having a 1% secant MD modulus of 1,000,000 psi or greater.
2. The method of claim 1 wherein the MD oriented film has a 1% secant transverse-direction (TD) modulus of 300,000 psi or greater.
3. The method of claim 1 wherein the blown film is made from a polyethylene resin which has a density within the range of 0.950 to 0.970 g/cc.
4. The method of claim 1 wherein the blown film is made from a polyethylene resin which has a density within the range of 0.955 to 0.965 g/cc.
5. The method of claim 1 wherein the blown film is made from a polyethylene resin which has a density within the range of 0.958 to 0.962 g/cc.
6. The method of claim 1 wherein the blown film is made from a polyethylene resin which has a weight average molecular weight (Mw) within the range of 130,000 to 1,000,000.
7. The method of claim 6 wherein the Mw is within the range of 150,000 to 500,000.
8. The method of claim 6 wherein the Mw is within the range of 155,000 to 300,000.
9. The method of claim 6 wherein the Mw is within the range of 155,000 to 250,000.
10. The method of claim 1 wherein the blown film is made from a polyethylene resin which has a number average molecular weight (Mn) within the range of 10,000 to 500,000.
11. The method of claim 10 wherein the Mn is within the range of 11,000 to 100,000.
12. The method of claim 10 wherein the Mn is within the range of 11,000 to 50,000.

13. The method of claim 10 wherein the Mn is within the range of 11,000 to 20,000.
14. The method of claim 1 wherein the draw-down ratio is 11:1 or greater.
15. The method of claim 1 wherein the oriented film having a 1% secant MD modulus of 1,100,000 psi or greater
16. An MD oriented polyethylene film made by the method of claim 1.
17. An MD oriented polyethylene film made by the method of claim 5.
18. An MD oriented polyethylene film made by the method of claim 9.
19. An MD oriented polyethylene film made by the method of claim 13.